Air and Space this Week

Item of the Week

ADLER PLANETARIUM

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A number of serious fortunes were made in the time period between the "Gilded Age" and the "Roaring 20s." The ethics of the time led many of the "captains of industry" to support a great number of projects that benefit the general public to this day. Andrew Carnegie was perhaps the most famous, but he was not the only one. Astronomy was one of the subjects that attracted funding, with the names of many benefactors of many pre-WWII telescopes and observatories where many fundamental discoveries were made, such as Hale, Hooker, Lick, and more.

But as NASA says, "Science isn't finished until it's shared!" In this context, sharing isn't just restricted to other professional astronomers, it also means sharing with the public, and using the natural interest in astronomy and Space exploration to stimulate the learning process in learners of all ages.

*One such generous person is someone you may not have heard of before. His name was Max Adler, and his gift to all of us that just turned **95 years old** proved to be of great importance in astronomical education and outreach.*

MEET MAX ADLER

Max Adler was born in Elgin, Illinois, on **May 12**, 1866. He had a talent for music, and grew up to become a concert violinist in nearby Chicago. He had a talent for marriage, too, becoming the husband of Sophie Rosenwald, the sister of Julius Rosenwald, who would become a partner in the reincorporation of Sears Roebuck & Com. In 1906. Both Adler and Rosenwald families had immigrated from Germany a few years before Max was born. Both Max and Julius were prominent in the local Jewish community and Julius was an astute businessman, initially in clothing manufacturing. Max became a senior VP in his brother-in-law's company based on who he married, but he, too, proved to be an astute manager.

For those of you who think of Sears as a diminishing old-line department store, things were very different antebellum period up to well after WWII. Under Julius' guidance, Sears became a catalog company with bricks-and-mortar stores, too, and became the **largest retail company** in the U.S.

Julius was a very civic-minded philanthropist, donating millions to vocational and technical education. His Foundation built schools in disadvantaged rural areas, working with Booker T. Washington, in places like Tuskegee, Alabama. He also commissioned a huge housing development, one of the first that internally mixed residential, commercial, and social uses; it still stands today, the Michigan Boulevard Garden Apartments, designed by an architect by the name of Ernest Grunsfeld, Max Adler's cousin.

Julius Rosenwald also was a big believer in educational opportunities for the general public; he would become the principal founder and backer for what would become Chicago's Griffen Museum of Science + Industry, and served as its President from 1927-1932. The museum site Julius selected was the Palace of Fine Arts building, constructed for the 1893 World's Columbian Exposition. The Museum is still active and important today.

A PLANETARIUM!

Museums became quite popular, especially after the Civil War. The Smithsonian Institution was perhaps the greatest example (sez unbiased me), the Metropolitan in New York and Franklin Institute in Philadelphia are others in the U.S. But a new technological development would some come on the scene, courtesy of the Carl Zeiss Works in Germany.

Oskar von Miller, an engineer who founded the Deutsches Museum in Munich, had become interested in bringing technology and science to the public when he saw an exhibition of early electrical tech around 1880 in Paris. He organized a similar exhibition with Marcel Deprez where, on September 16, 1882, the two demonstrated that an electric current could be transmitted 60 km, the distance between Munich and the neighboring town of Miesbach. He would build the first electric power station in Germany, in 1884. Like Julius Rosenwald, Oskar wanted to create a museum of science and technology, and enlisted a number of famous scientists in the effort, including Plank and Roentgen.

But electricity and physics were not the only scientific/technical topics von Miller wanted to present to the public. He was also very interested in astronomy, and was no doubt dismayed somewhat with the increasing difficulty in enjoying the nighttime sky as Munich grew. He wanted the public to be able to see what the real night sky looks like away from the city, and commissioned the Carl Zeiss Works, well known then and now for the quality of their optical devices, to design and build a projector that could reproduce the appearance and apparent movements of the night sky inside a room with a domed ceiling. Zeiss' Walther Bauersfeld got the job, and the first ***planetarium*** opened in 1923. It was a big hit with the public, and more than a dozen were built across Europe in the next five years.

MAX IS BACK

Max Adler was able to retire in his early 60s, in 1928. He was wealthy and as philanthropic as his brother-in-law, and 100% inspired by Julius' success with his museum. A friend had told him of the amazing thing they saw in Munich – a duplication of the night sky and its motions

indoors! Max was intrigued, and having time and money and motivation, he took cousin architect Grunsfeld off to Munich to see for himself. They were both blown away at what they saw. Max knew that a planetarium would be the perfect complement to the Chicago Museum of Science and Industry. In addition, Max learned that a large collection of astronomical instruments, many of which were antiques, would be coming up for sale in Amsterdam; he arranged for the purchase of the entire lot, a deal completed in 1930.

Incorporating a planetarium into the still-building CMSI was a great idea, and Max committed $500K to the effort (a huge sum in those days). However, conversion of the old Exhibition Building into one appropriate for the purpose was expensive (no problem) and time-consuming (big problem). Even more money and time would be necessary to make the Exhibition Building suitable for Max's plan. Max realized that he would need to put his planetarium/museum in a different site.

Chicago city government has always been in favor of public parks and facilities. The precursor to today's Chicago Park District was the South Park Commissioners, who had worked with famed landscape architect Daniel Burnham to create a "Plan for Chicago" in 1909. That plan envisioned many civic improvements, among them the creation of five small islands in Lake Michigan for public use. Only the first was actually completed, Northerly Island, which would be finished well before the next international exhibition, the Century of Progress Exhibition of 1933.

Meanwhile, Max realized that Northerly Island would be the ideal location for his new planetarium/astronomical museum, and was able to secure the necessary property and permissions. Cousin Grunsfeld designed a beautiful facility, complete with the latest Zeiss planetarium projector and space for the collection of astronomical instruments from the sale in Amsterdam. It would open to the public on Max Adler's birthday, May 12, 1930, ninety-five years ago this month. The facility's first director was Dr. Phillip Fox of Northwestern University just up the lakeshore. And of course, the facility was named the "Adler Planetarium" in honor of its benefactor and driving force.

Adler Planetarium was the first planetarium ever built in the western hemisphere.

ADLER'S FIRST 75 YEARS

Part of the evolving planning of the Chicago Park District was to take advantage of the existing Grant Park and the adjacent Field Museum in time for the Century of Progress Exhibition (CPE) in 1933. Adler's site on Northerly Island was to the east of the Field Museum, and John G. Shedd stepped up financially to build a large aquarium facility. Shedd was a protégé of Marshall Field (benefactor of the namesake museum), so he was glad to provide funding for a nearby learning facility. The three facilities, and Lincoln Park, create a nexus of learning opportunities for all ages, complete with an amazing lakefront skyline. The Shedd Aquarium opened on May 30, 1930, less than three weeks after Adler opened its doors.

The Adler Planetarium was a hit with the public from its opening. Adler's popularity grew along with the population of the greater Chicago area, and new exhibits and other updates to the facility occurred regularly. Public interest in the Space program also spurred visitation. The management of Alder and the Chicago Park District created a board of trustees in 1967 as part of a general upgrading process for the museum district. Adler's main building underwent refurbishing, which included the installation of a Zeiss Mark VI planetarium projector.

[**ASIDE #1**: I was in high school in suburban Chicago in the early 1970s, and I was a member of the Adler Planetarium. They ran a number of night and weekend classes, several of which I took (my folks let me commute into the city alone, even though I was too young to drive). I also participated in an NSF student program there my junior year, called the "Astro-Science Workshop," and run by Northwestern professor J. Allen Hynek (yes, him). I was so impressed by the live planetarium shows, using that wonderful Mark VI, that I vowed to someday host them. And I did! In fact, I gave the last-ever "The Stars Tonight" sky show at the National Air and Space Museum, using their Mark VI, which had been a gift of State from the government of West Germany on the advent of the USA Bicentennial. The projector was removed during the renovation of NASM's downtown building, became an accessioned NASM artifact, and was placed on display at the Udvar-Hazy Center (at least through last year, which was the last time I visited the UHC). For more about the history of NASM's projector, see Dave DeVorkin's article here: https://airandspace.si.edu/stories/editorial/farewell-zeiss-planetarium-projector.]

Adler Planetarium has had several additions since 1970, including a major renovation and expansion underground that opened on Max's birthday, 1973, the construction of the Doane Observatory for public viewing in 1977, and the Sky Pavillion, with four new exhibition galleries and more, in 1999. Adler's most recent new facility is the Space Visualization Laboratory, opened in 2007, allowing visitors to explore the Universe virtually. Telescope and imaging technology are advancing rapidly, and the Doane Observatory, which already had the largest publicly-available telescope in Chicagoland, had a major facility update in 2015. Doane hosts daytime and nighttime telescope "'Scopes at Adler" programming, as well as providing basic telescope and observing information on-line.

ADLER TODAY

Adler Planetarium continues to be an outstanding formal/informal education facility to this day. It's a place where exhibits of astronomical equipment, astronomical programming for learners of all ages, and seeing the night sky with one's own eyes stimulates everyone's imagination. But Adler's influence extends far beyond what was Northerly Island!

The new Simonyi Telescope at the Vera Rubin Observatory began operations two weeks ago. The facility was originally called the "Large Synoptic Survey Telescope," and it would have the largest digital camera built to date, 6.2 GB! One of its primary purposes is to survey the entire sky visible to it on a very regular basis, producing 20 TB of data ***every night***. Comparing pictures of the same section of sky so often will allow for the discovery of very faint "things that move" or "things that change;" ideal for finding potentially-dangerous asteroids, Kuiper Belt

objects, and short-lived astronomical phenomena. Even with AI the data analysis task is enormous, but ideal for an army of citizen scientists to handle.

Adler Planetarium has been a member of the LSST project from the beginning, knowing that the data volume expected would require lots of assistance from the public. Adler staff helped build out and host The Zooniverse, a citizen science platform/portal, and foster collaborations that build out citizen science projects.

Adler has a program called "Far Horizons," which engages learning by "bringing real Space exploration down to Earth and into the hands of students, volunteers, and the public. For over twelve years, we have designed and built experiments with participants of all ages and sent them to the stratosphere aboard high-altitude balloons. We mentor, experiment, design, launch, and explore." (quote) Over 100 such missions have been designed, monitored, and tracked by students. Some of the balloons carry instrumentation that provide data about light pollution, in Far Horizon's "Mission NiteLight," student-built instrumented balloons make observations all over the world, its "Ground Observation Network" uses ground-based info from the Chicago area, and students from Little Village in Chicago that promotes dark sky community awareness.

Not all Adler educational programs involve "looking up." In the wee hours of February 6, 2017, a larger meteor fell into Lake Michigan off the coast at Sheboygan, WI. Experts at Adler, the Field Museum, and the Shedd Aquarium (and NASA) were intrigued, and jointly developed the Aquarius Project, a teen-driven underwater ROV search of those waters hoping to find (pieces of) the meteorite body.

[ASIDE #2: The success of any museum depends on the capabilities of its staff, and Adler of course is no exception. From the vision of Max Adler through the periods of continued growth and expansion to the Adler programming today, Adler's staff has performed superbly. And I can speak of personal experience that one person in particular has been a key part of Adler's recent success. His name is Andrew Johnston, and he is the Adler VP for Museum Experience & Collections. Andy earned his spurs at NASM, working his way through graduate school while providing significant academic and institutional support for the Center for Earth and Planetary Studies. Andy and Dave DeVorkin hosted the final public event with the Mark VI on September 6, 2019. Andy and I conducted field work a few times, and he's an excellent scientist and educator. He's got the coolest hobby for a museum guy, too. Everywhere he goes, he visits out every museum, no matter how small. His count was well over 1000 by the time Adler came calling!]

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Adler Planetarium

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